Abstract

The effect of Cerium and Cobalt substitution in Zinc ferrites with respect to their electrical and magnetic properties has been investigated in this paper. The nanoparticles of Zn1-x-y Cex Coy Fe2O4 (x = 0.012, 0.014, 0.016, 0.018; y = 0.01, 0.001, 0.014, 0.016) is prepared by sol gel route and sintered in a microwave furnace. The nano size, structure and composition of Ce-Co
doped Zinc ferrite ceramics are analyzed by X-ray diffraction and further confirmed by SEM monographs, FTIR, and EDAX. By analyzing the change in magnetic saturation and coercivity, the magnetic behaviour of these nano ferrite materials is confirmed. The electrical measurements have been performed to determine the dielectric constant ($\varepsilon_r$), dielectric loss ($\varepsilon_r''$) and loss tangent in the frequency range of 20KHz - 20MHz. It is also found that the permittivity of these nano materials is being reduced with the increase in frequency.

Reference

Synthesis of Nano sized Ce-Co Doped Zinc Ferrite and their Permittivity and Hysteresis Studies

- A.A Sattar., et.al, Rare Earth Doping Effect on the Electrical Properties of Cu-Zn Ferrites,


Index Terms
Computer Science
Applied Sciences

Key words
Nano ferrite materials
Sol gel
cerium doped
VSM
SEM

EDAX

Permittivity Studies